

U.S. Application No. 10/048,184
Amendment mailed April 2, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A natural resin (NR) characterized by comprising:

- i) a free phenol content from about 0.001 % to about 0.1 % (w/w);
- ii) a total phenolic content from about 35% to about ~~80~~ 95% (w/w);
- iii) a ~~pleasant-smoky~~ odour;
- iv) a pH from about 2.0 to about 5.0;
- v) a water content of from about 1 to about 10 wt%;
- vi) an acids content of from about 0.1 to about 5.0 dry wt%; and
- vii) an average molecular weight (wet)/(dry) of from about (300-450)/(350-500)

Daltons;

wherein the NR is solid at room temperature

Claim 2 (currently amended): The NR of claim 1 further characterized by comprising

- i) a pH from about 2.0 to about 3.0; a water content of from about 3 to about 10 wt%, and a melting point from about 70°C to about 150°C.

Claims 3-5 (cancelled)

Claim 6 (currently amended): The NR of claim ~~5~~ 1 further characterized by comprising:

- i) a net caloric value of about 4355 cal/g (18.22 MJ/kg); and
- ii) a gross caloric value of about 4690 cal/g (19.62 MJ/kg).

Claim 7 (original): A resin composition comprising the NR of claim 1.

Claim 8 (original): The resin composition of claim 7 wherein said resin is an adhesive resin, and said NR is present within said resin composition from about 1 % to about 40% (w/w).

U.S. Application No. 10/048,184
Amendment mailed April 2, 2004

Claims 9-10 (cancelled)

Claim 11 (original): The resin composition of claim 7, comprising a phenol formaldehyde resin, wherein a portion of the formaldehyde of said phenol-containing formaldehyde resin is replaced with NR.

Claim 12 (currently amended): The adhesive resin composition of claim 11 wherein NR replaces up to about 50% of said formaldehyde content within said phenol-containing formaldehyde resin.

Claim 13 (currently amended): The adhesive resin composition of claim 12 comprising a formaldehyde:phenol from about 1.2:1 to about 3:1.

Claim 14 (currently amended): The adhesive resin composition of claim 13 wherein the formaldehyde:phenol ratio is 1.6:1.

Claim 15 (original): The resin composition of claim 7, comprising a phenol formaldehyde resin, wherein up to about 100% of the phenol content, of said phenol-containing formaldehyde resin is replaced with NR.

Claim 16 (original): A product prepared using the resin composition of claim 7.

Claim 17 (original): A product prepared using the resin composition of claim 9.

Claim 18 (original): A product prepared using the resin composition of claim 10.

Claim 19 (original): The product of claim 16 comprising, an industrial resin product.

Claim 20 (original): The product of claim 19, wherein said industrial resin product is selected from the group consisting of laminated wood, plywood, particle board, high density particle

U.S. Application No. 10/048,184
Amendment mailed April 2, 2004

board, oriented strand board, medium density fiber board, hardboard or wafer board, mouldings, linings, insulation, foundry resins, asphalt, concrete, brake linings and grit binders.

Claim 21 (currently): A method of preparing a solid natural resin (NR) comprising:

- i) liquefying wood, wood bark or other biomass using fast pyrolysis in order to produce vapours and char;
- ii) removing said char from said vapours;
- iii) recovering said vapours to obtain a liquid product; and
- iv) processing said liquid product using distillation/evaporation to produce said solid NR.

Claim 22 (original): The method of claim 21 wherein, said step of recovering comprises obtaining said liquid product from a primary recovery unit, a secondary recovery unit or both a primary and a secondary recovery unit.

Claim 23 (original): The method of claim 22 wherein said step of processing comprises pretreating said liquid product prior to said distillation/evaporation.

Claim 24 (original): The method of claim 23 wherein said pretreating comprises adding water to said liquid product prior to said distillation/evaporation.

Claim 25 (original): The method of claim 21 wherein said step of processing further comprises adding water to said NR obtained following distillation/evaporation.

Claim 26 (original): A natural resin prepared according to the method of claim 21.

Claim 27 (currently amended): A resin composition comprising the a natural resin (NR) ~~of claim 26~~ prepared according to the method of:

- i) liquefying wood, wood bark or other biomass using fast pyrolysis in order to produce vapours and char;

U.S. Application No. 10/048,184
Amendment mailed April 2, 2004

- ii) removing said char from said vapours;
- iii) recovering said vapours to obtain a liquid product; and
- iv) processing said liquid product using distillation/evaporation to produce said NR.

Claim 28 (original): The resin composition of claim 27 wherein said resin composition is an adhesive composition.

Claim 29 (original): An industrial product prepared using the adhesive composition of claim 28.

Claim 30 (original): The product of claim 29, wherein said industrial resin product is selected from the group consisting of laminated wood, plywood, particle board, high density particle board, oriented strand board, medium density fiber board, hardboard or wafer board, mouldings, linings, insulation, foundry resins, asphalt, concrete, brake linings, and grit binders.

Claim 31 (new): The NR of claim 1 further characterized by comprising:

- (a) a water content of about 6 wt%;
- (b) a pH of about 2.5;
- (c) an acid content of about 0.7 dry wt%; and
- (d) an NRP index of about 90.

Claim 32 (new): The NR of claim 31, further characterized by comprising an average molecular weight of about 388/412 (wet/dry).

Claim 33 (new): The NR of claim 1, further characterized by comprising a melting point from about 110° to about 150°C.

Claim 34 (new): The NR of claim 33 comprising:

- (a) a phenolic content of about 95%;
- (b) a hydrocarbon content of about 0.1%;
- (c) an acids content of about 1%;

U.S. Application No. 10/048,184
Amendment mailed April 2, 2004

- (d) a water content of about 3%; and
- (e) a total ester, aldehyde and alcohol content of about 0.9%.

Claim 35 (new): The NR of claim 34 further characterized by comprising:

- (a) gasoline solubility of about 1%;
- (b) an ash content of about 0.01%;
- (c) a flash point of greater than about 280°C;
- (d) a density of about 1.19 g/cm³ at 25°C;
- (e) a hydroxyl content of about 1.4%; and
- (f) a methoxyl content of about 5.3%.